

NUTRIENT MANAGEMENT PLAN

Facility/Owner:	County:	Prepared By:	Date :	
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Spreadsheet A.) Total Nitrogen And Phosphorus Produced From Operation

Animal Type:	5. No. of animals	6. Avg. weight (lbs.)	7. Pounds of: N P ₂ O ₅ per day per animal	8. Days of Confinement	9. Total: N P ₂ O ₅ (lbs.)	10. % N retained during handling & storage	11. Total N available for application	12. % N retained after application	13. Total N retained in field	14. 3-Yr. Mineralization rate based on type of manure handling	15. Lbs. of: N P ₂ O ₅ available for the crop
CATTLE											
- Dairy (system 1)	-										
- Dairy (system 2)	-										
- Dairy (system 3)	-										
- Beef (system 1)											
- Beef (system 2)	-										
- Beef (system 3)	-										
SWINE											
- Nursery pig											
- Growing pig											
- Finishing pig											
- Gestating sow											
- Sow and litter											
- Boar											
SHEEP											
- Sheep										Sheep - solid	45
POULTRY											
- Layers										Poultry	85
- Broilers										Poultry	85
- Turkey										Poultry	85
HORSE											
- Horse										Horses	35
FOWL											
- Ducks										Duck	85
- Geese										Geese	85
Total lbs. Of N and P₂O₅ available for the crop:											

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Spreadsheet B.) Field Identification Summary

Date: Jan-00														
16.	17.	18.	19.	20.	21.	22.	23.				24.			
Field ID (tract & field)	Soil Map Unit	County	Field Location: (1/4 Section, Township, Range)	Owned (Y) Not owned (N)	Total acres in field	No Till?	Acres Excluded from Manure Application:					Net acres available for manure application	Irrigated? Yes (Y) or No (N)	
							Enter acres to be excluded:				Setback distance(s) applied			Total acres excluded
							Wells	Drainages	Wetlands	Slope				
1)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
2)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
3)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
4)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
5)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
6)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
7)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
8)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
9)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
10)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
11)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
12)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
13)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
14)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
15)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
16)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
17)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
18)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
19)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
20)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
21)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
22)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
23)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
24)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
25)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
26)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
27)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
28)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
29)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
30)			1/4, Sec. , T , R	<input type="checkbox"/> Y, <input type="checkbox"/> N		<input type="checkbox"/>							<input type="checkbox"/> Y, <input type="checkbox"/> N	
Total Acres					0	Total Net Acres					0			

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Spreadsheet C.) Crop Information and Nitrogen/Phosphorus Needs

25.		26.		27.			28.	29.			30.				31.					
Date		Crops to be grown:			Yield goals (bu/acre), (ton/acre) or (cwt/acre):			Requirements for selected crops:			Nitrogen credits	Legume credits (lbs-N/acre):			Additional N needed for crops:				Total: N P ₂ O ₅	
Field	Prior year	Year 1	Year 2	Year 3	Prior Yr. Map Unit	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Average	needed for each field	
1)																				
2)																				
3)																				
4)																				
5)																				
6)																				
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29)																				
30)																				
Total lbs. of N and P2O5 Available for the Crop:																				
Total lbs. of N and P2O5 Required for the Listed Fields:																				

**** RESULTS:

There IS NOT adequate land for manure application based on the Nitrogen needed for the listed fields.
There IS NOT adequate land for manure application based on the Phosphorus needed for the listed fields.

TABLE 1 - Manure Nutrient Production

Ref No.	Size, lbs.	Animal	N Content lb/day	P ₂ O ₅ Content lb/day
1	150	Dairy Cattle	0.064	0.03
2	250		0.106	0.04
3	500		0.213	0.09
4	1,000		0.425	0.17
5	1,400		0.595	0.24
1	500	Beef Cattle	0.17	0.13
2	750		0.26	0.19
3	1,000		0.34	0.25
4	1,250		0.43	0.31
1		Cow	0.36	0.273
		Swine		
1	35	Nursery pig	0.02	0.012
1	65	Growing pig	0.03	0.022
1	150	Finishing pig	0.07	0.05
2	200		0.09	0.067
1	275	Gestating sow	0.07	0.05
1	375	Sow and litter	0.1	0.055
1	350	Boar	0.09	0.064
1	100	Sheep	0.042	0.02
		Poultry		
1	4	Layers	0.0029	0.0025
1	2	Broilers	0.0017	0.0009
1	1,000	Horse	0.3	0.161

TABLE 2 - Percent Nitrogen Retained During Handling & Storage

Ref. No.	Type of System	N Retained %
1	Solid - daily scrape and haul	72
2	Solid - manure pack	70
3	Solid - open lot	52
4	Solid - deep pit (poultry)	62
5	Solid - litter (birds)	62
6	Solid - manure stacking	65
7	Liquid - anaerobic pit	78
8	Liquid - above-ground (covered)	85
9	Liquid - above-ground (uncovered)	80
10	Liquid - earth storage	70
11	Liquid - lagoon	25
12		

TABLE 3 - Percent of Nitrogen Retained after Application

Ref. No.	Land Application Method	%N Delivered from Storage to Land by Application Method
1	Injection	98
2	Broadcast(incorporate within 24 hrs.)	90
3	Broadcast(incorporate after 5 days)	20
4	Sprinkling	70
5		

TABLE 4 - Three-Year Mineralization Rate

Ref. No.	Manure Type / Manure Handling	3-Yr Min %	Animal
1	Fresh	81	Swine
2	Open lot	55	
3	Covered watertight structure	73	
4	Uncovered watertight structure	68	
5	Manure storage pond	59	
6	Pits beneath slatted floor	83	
7	Anaerobic lagoon > 50% dilution	49	
8			
1	Solid without bedding	61	Beef
2	Solid with bedding	45	
3	Anaerobic liquid	65	
4	Aerobic liquid	45	
5			
1	Solid without bedding	61	Dairy
2	Solid with bedding	45	
3	Anaerobic liquid	65	
4	Aerobic liquid	45	
5			
1	Solid	45	Sheep
1	Poultry	85	Poultry
1	Horses	35	Horses
1	Fowl	85	Fowl

Table 7 - Legume Nitrogen Credits

Previous Crop		
	Short Season (small grains, etc.) (lbs of N per bu.)	Full Season (corn, sunflowers, etc.) (lbs of N per bu.)
Soybeans	0.5	1
	(lbs of N per acre)	(lbs of N per acre)
Alfalfa (harvested)*	50	100
Sweetclover (unharvested) *	50	100
Sweetclover (harvested) *	10	20
Edible beans, field peas	10	20
* Second-year Nitrogen credits are half of first-year credits.		
Source: SDSU Extension Publication EC 750, March 1998. The information for soybeans and alfalfa is an average. For more detailed information, see EC 750 page 3, for a full listing.		

TABLE 5 - Nitrogen Requirements for Selected Crops

CROP	NITROGEN	CROP	NITROGEN	CROP	NITROGEN
	(lb/acre-2')		(lb/acre-2')		(lb/acre-2')
Alfalfa (per ton)	55	Flax (per bu)	3.0	Rapeseed (per cwt)	6.48
Barley, Feed (per bu)	1.7	Grass (per ton)	25	Rye (per bu)	2.5
Barley, Malting (per bu)	1.5	Grass, Sudan (per ton)	25	Safflower (per lb)	0.05
Buckwheat (per bu)	2.2	Millet (per lb)	0.035	Sorghum (per bu)	1.1
Canola (per cwt)	6.48	Mustard (per cwt)	6.48	Sorghum, Forage (per ton)	25
Corn (per bu)	1.2	Oats (per bu)	1.3	Soybean (per bu)	3.83
Corn Silage (per ton)	10.38	Potatoes (per cwt)	0.4	Sunflowers (per lb)	0.05
Edible Beans (per lb)	0.05			Wheat (per bu)	2.5
(lb/acre-2') = Two foot nitrate soil test		References: SDSU Extension Publication EC750, March 1998, and			
(cwt/acre) = Hundred weights / acre		the SDSU Extension, for Soybean and Alfalfa N Requirements.			

TABLE 6 - Phosphorus Requirements for Selected Crops

Crop	P2O5 (lbs)	Crop	P2O5 (lbs)
Alfalfa (per ton)	12	Mustard (per cwt)	1.5
Buckwheat (per bu)	0.53	Oats (per bu)	0.25
Barley, Feed (per bu)	0.41	Potatoes (per cwt)	0.09
Barley, Malting (per bu)	0.41	Rapeseed (per cwt)	1.5
Canola (per cwt)	1.5	Rye (per bu)	0.48
Corn Grain (per bu)	0.35	Safflower (per lb)	0.011
Corn Silage (per ton)	4.3	Sorghum (per bu)	0.27
Edible Beans (per lb)	0.013	Soybean (per bu)	0.77
Flax (per bu)	0.7	Sudan Grass (per ton)	5.8
Forage Sorghum (per ton)	5.8	Sunflowers (per lb)	0.011
Grass (per ton)	10	Wheat (per bu)	0.56
Millet (per lb)	0.008		

MANURE MANAGEMENT SYSTEM DESCRIPTION

(As Shown in Column 10. On Spreadsheet A)

SOLID

Daily Scrap and Haul: A manure management system in which the primary manure handling practice is removal and land application of the manure from the feeding operation on a daily basis. These systems may be either open or housed lots.

Manure Pack: A manure management system in which manure is stored in a bedded pack in the confinement area. These systems will typically be housed lots where bedding is added to maintain manure as a solid.

Open Lot: An unroofed confinement area that has a manure management system to collect and contain runoff. These manure management systems typically consist of uncovered manure stockpiling areas, sediment basins to settle out solids in runoff water, and storage ponds to collect and store runoff water.

Deep Pit (Poultry): A manure management system in which manure is collected and stored in a pit beneath poultry cages.

Litter (Birds): A manure management system in which manure from a poultry, turkey, or fowl feeding operation is allowed to accumulate on the floor where it is mixed with litter.

Manure Stacking: Typically a manure management system where manure is removed frequently from a primarily housed feeding operation and stacked in a covered or uncovered stockpiling area.

Liquid

Anaerobic Pit: A manure management system in which solid and liquid manure is collected and stored in a watertight underground pit. These are typically deep pits located beneath the animal confinement building, but could include remote, covered underground tanks.

Above-Ground Storage: A manure management system in which solid and liquid manure is collected and stored in a watertight above-ground tank. The tank may be covered or uncovered.

Earthen Storage: A manure management system in which an impoundment is made by excavation or earth fill to collect and store solid and liquid manure.

Lagoon: A manure management system in which liquid and solid manure is treated either by aerobic or anaerobic processes to reduce the nutrient content.